



History of Architectural Engineering

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Architecture has been closely associated with engineering in the history of the building construction. The engineering for buildings was determined empirically in the early periods; later, scientific calculations for structures were developed in the 17th century, and engineering was taught as a separate course in the 18th century. Architectural engineering was established as a discipline in the formal realm of engineering in the late 19th century when the University of Illinois became the first of many universities to offer an architectural engineering program. The university with the longest ABET (Accreditation Board for Engineering and Technology, Inc.) accreditation is Pennsylvania State University, which received theirs in 1935.

EARLY PERIODS

In the early periods, there was no clear separation between architecture and engineering. The Roman author Vitruvius wrote in "The Ten Books on Architecture", the aesthetic principles of architecture as well as aspects of Roman engineering and construction materials such as concrete. Medieval master builders who were involved in the construction of cathedrals relied on their knowledge deduced empirically and codified into rules rather than on the science of statics.

In the 17th century, Galileo was the first to introduce some elements of modern science into the structural calculation of building by determining the breaking strength of beams, and this was followed by the work of Robert Hooke. The two disciplines of architecture and engineering began to separate in the mid-18th century when engineering schools were established.

MODERN ERA

Many modern architects such as Frank Lloyd Wright were trained as engineers rather than architects, while engineers such as Gustave Eiffel produced well-known structures. Architecture and engineering came together as a field of study in the United States when architectural Engineering was established as a university program in the late 19th century.

It has now developed into a field that is closely associated with all aspects of the built environment, from the planning and design to the construction and operation of structures. Notable modern figures in engineering involved in architecture include Santiago Calatrava and Ove Arup. Recent advances in computing have allowed for complex structural calculations and produce more adventurous architectural designs.

On October 1, 1998 NSAE (National Society of Architectural Engineers) and AED (Architectural Engineering Division) joined together to form AEI (Architectural Engineering Institute), which is a branch of ASCE (American Society of Civil Engineers)